



Driving and the built environment: The effects of compact development on motorized travel, energy use, and CO2 emissions

Author(s):	National Research Council (US) Committee for the Study on the Relationships Among Development Patterns Vehicle Miles Traveled and Energy Consumption
Year:	2009
Series:	Transportation Research Board Special Report, 298
Publisher:	National Academy of Sciences (Washington, DC)

Abstract:

The vast majority of the U.S. population—some 80 percent—now lives in metropolitan areas, but population and employment continue to decentralize within regions, and density levels continue to decline at the urban fringe. Suburbanization is a long-standing trend that reflects the preference of many Americans for living in detached single-family homes, made possible largely through the mobility provided by the automobile and an extensive highway network. Yet these dispersed, automobile-dependent development patterns have come at a cost, consuming vast quantities of undeveloped land; increasing the nation's dependence on petroleum, particularly foreign imports; and increasing greenhouse gas (GHG) emissions that contribute to global warming. The primary purpose of this study is to examine the relationship between land development patterns, often referred to as the built environment, and motor vehicle travel in the United States and to assess whether petroleum use, and by extension GHG emissions, could be reduced through changes in the design of development patterns. A key question of interest is the extent to which developing more compactly would reduce vehicle miles traveled (VMT) and make alternative modes of travel (e.g., transit, walking) more feasible. FINDINGS Link Between Development Patterns and VMT Finding 1: Developing more compactly, that is, at higher residential and employment densities, is likely to reduce VMT. Finding 2: The literature suggests that doubling residential density across a metropolitan area might lower household VMT by about 5 to 12 percent, and perhaps by as much as 25 percent, if coupled with higher employment concentrations, significant public transit improvements, mixed uses, and other supportive demand management measures. Finding 3: More compact, mixed-use development can produce reductions in energy consumption and CO2 emissions both directly and indirectly. To the extent that more compact development reduces VMT, it will directly reduce fuel use and CO2 emissions. Publisher's description.

Source: <http://www.trb.org/Publications/Blurbs/162093.aspx>

Resource Description

Exposure : ☒

weather or climate related pathway by which climate change affects health

Air Pollution, Unspecified Exposure

Geographic Feature: ☒

resource focuses on specific type of geography

Climate Change and Human Health Literature Portal

Urban

Geographic Location:

resource focuses on specific location

United States

Health Co-Benefit/Co-Harm (Adaption/Mitigation):

specification of beneficial or harmful impacts to health resulting from efforts to reduce or cope with greenhouse gases

A focus of content

Health Impact:

specification of health effect or disease related to climate change exposure

General Health Impact

Mitigation/Adaptation:

mitigation or adaptation strategy is a focus of resource

Mitigation

Model/Methodology:

type of model used or methodology development is a focus of resource

Cost/Economic, Other Projection Model/Methodology

Other Projection Model/Methodology: discussion only

Resource Type:

format or standard characteristic of resource

Review

Timescale:

time period studied

Time Scale Unspecified